

Rev. 16, 5/02

INTEL INVENTION DISCLOSURE
ATTORNEY-CLIENT PRIVILEGED COMMUNICATION
 located at <http://legal.intel.com/patent/index.htm>

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OCT 10 2005

DATE: _____

It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. Invention Disclosure forms **MUST** be sent electronically via email to your manager/supervisor who should then forward with their approval to our email account "Invention disclosure submission." If you have any questions, please call 8-264-0444.

| | | |
|--|----------------------------|-----------------------|
| Last Name: House | First Name: Colby | M.I. J |
| Intel Phone Number: 503-613-8310 | Intel Fax Number: | Mailstop: RA1-236 |
| E-mail address: Colby.j.house@intel.com | | WWID: 10638266 |
| Citizenship: U.S. | Are you a contractor? Yes: | No: X |
| Home Address: 2532 NW 4 th Avenue | | |
| City: Hillsboro | State: OR | Zip: 97124 |
| Corporate Level Group: | Division: | Country: USA |
| Supervisor: Bramblett, Thomas | WWID: 10072287 | Subdivision: |
| | M/S: RA1-234 | Phone #: 503-613-2598 |

| | | |
|------------------------|----------------------------|--------------|
| Last Name: | First Name: | M.I. |
| Intel Phone Number: | Intel Fax Number: | Mailstop: |
| E-mail address: | | WWID: |
| Citizenship: | Are you a contractor? Yes: | No: |
| Home Address: | | |
| City: | State: | Zip: |
| Corporate Level Group: | Division: | Country: |
| Supervisor: | WWID: | Subdivision: |
| | M/S: | Phone #: |

| | | |
|------------------------|----------------------------|--------------|
| Last Name: | First Name: | M.I. |
| Intel Phone Number: | Intel Fax Number: | Mailstop: |
| E-mail address: | | WWID: |
| Citizenship: | Are you a contractor? Yes: | No: |
| Home Address: | | |
| City: | State: | Zip: |
| Corporate Level Group: | Division: | Country: |
| Supervisor: | WWID: | Subdivision: |
| | M/S: | Phone #: |

(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

| |
|---|
| 2. Title of Invention: Motorized slurry arm with or without precision dispense nozzle. |
|---|

| |
|--|
| 3. What technology/product/process (code name) does your invention relate to (be specific if you can) All technologies using CMP. |
|--|

| |
|--|
| 4. Include several key words to describe the technology area of the invention in addition to #3 above: Slurry dispense, CMP, Thin Films, Motorized, process control |
|--|

| |
|--|
| 5. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): Concept |
|--|

| |
|--|
| 6a. Has a description of your invention been (or planned to be) published outside of Intel: No. If YES, was the manuscript submitted for pre-publication approval through the Author Incentive Program: If YES, please identify the publication and the date published: |
|--|

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6b. Has your invention been used/sold or planned to be used/sold by Intel or others?
Plans pending for possible trial (usage) on site here at Ronler Acres (Intel).
If YES, date it was sold or will be sold:
No.

6c. Does this invention relate to technology that is or will be covered by a SIG (special interest group)/standard or specification?
If YES, name of SIG/standard/specification: N/A

6d. If the invention is embodied in a semiconductor device, actual or anticipated date of tapeout?
N/A

6e. If the invention is software, actual or anticipated date of any beta tests outside Intel:
N/A

7. Was the invention conceived or constructed in collaboration with anyone other than an Intel blue badge employee or in performance of a project involving entities other than Intel (e.g. government, other companies, universities or consortia)? NO: No. If YES, name of individual or entity:

NC

8. Is this invention related to any other invention disclosure that you have recently submitted? If so, please give the title and inventors:
No.

**PLEASE READ AND FOLLOW THE DIRECTIONS ON
HOW TO WRITE A DESCRIPTION OF YOUR INVENTION**

**Try to limit your description to 2-3 pages
Do NOT attach a presentation, white paper, or specification
ANSWER ALL OF THE QUESTIONS BELOW**

Please provide a description of the invention and include the following information:

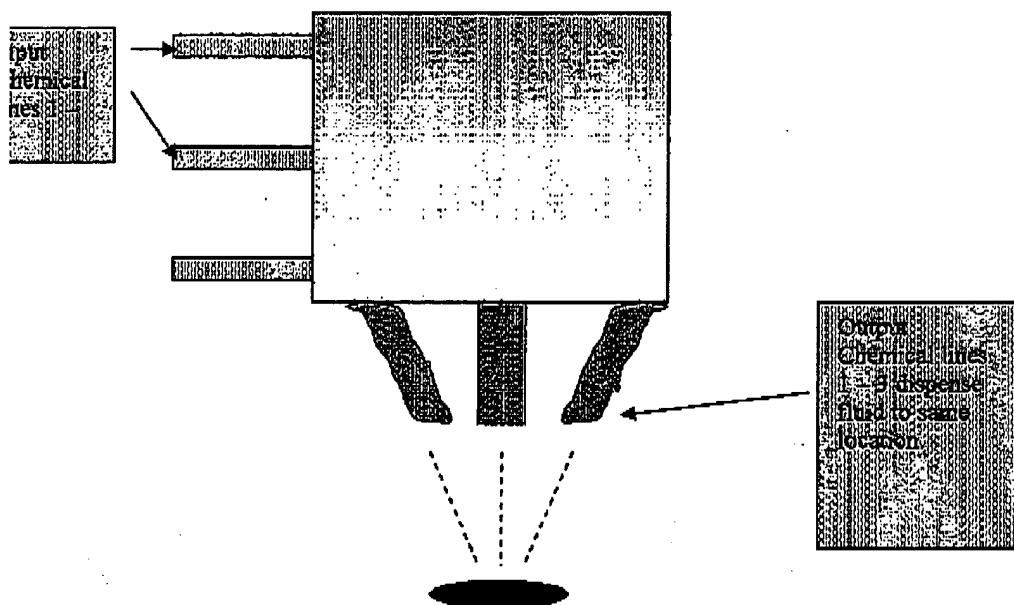
1. **Describe in detail what the components of the invention are and how the invention works.**
The motorized slurry arm is composed of three main components: 1. Motor for modulating slurry arm position. 2. Slurry arm for containment of slurry tubing. 3. Slurry tubing that transports slurry from source.
A stepper motor is attached to the slurry arm so that the arm can be swept precisely in real time. In real time, slurry is distributed in a controlled fashion to the head (i.e. how long slurry is applied, what radius of wafer slurry is distributed to).
The slurry arm can be retrofit onto a current CMP toolset or included in initial tool design. The new slurry arm configuration would also allow distribution of single and/or multiple chemicals to be distributed onto the same point on the polish surface by angling the output lines. The dispense arm is intended for multiple chemical line inputs and precise dispersion onto polish surface.
2. **Describe advantage(s) of your invention over what is currently being done.**
Currently slurry/chemical distribution is provided by a slurry arm that is "fixed" (cannot be controlled in real time). Control of slurry distribution during process would enhance performance and provide more degrees of freedom.

Exhibit I

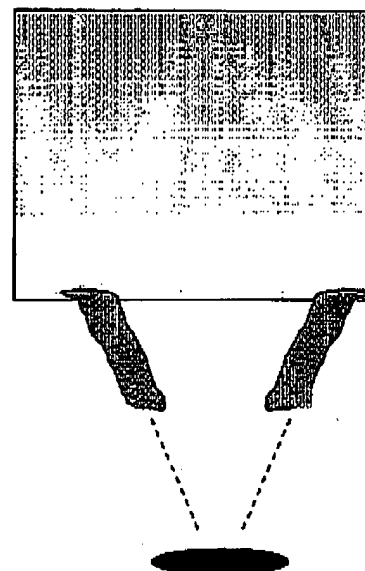
Rev. 16, 5/02

3. You MUST include at least one figure illustrating the invention. If the invention relates to software, include a flowchart or pseudo-code representation of the algorithm.

Side View



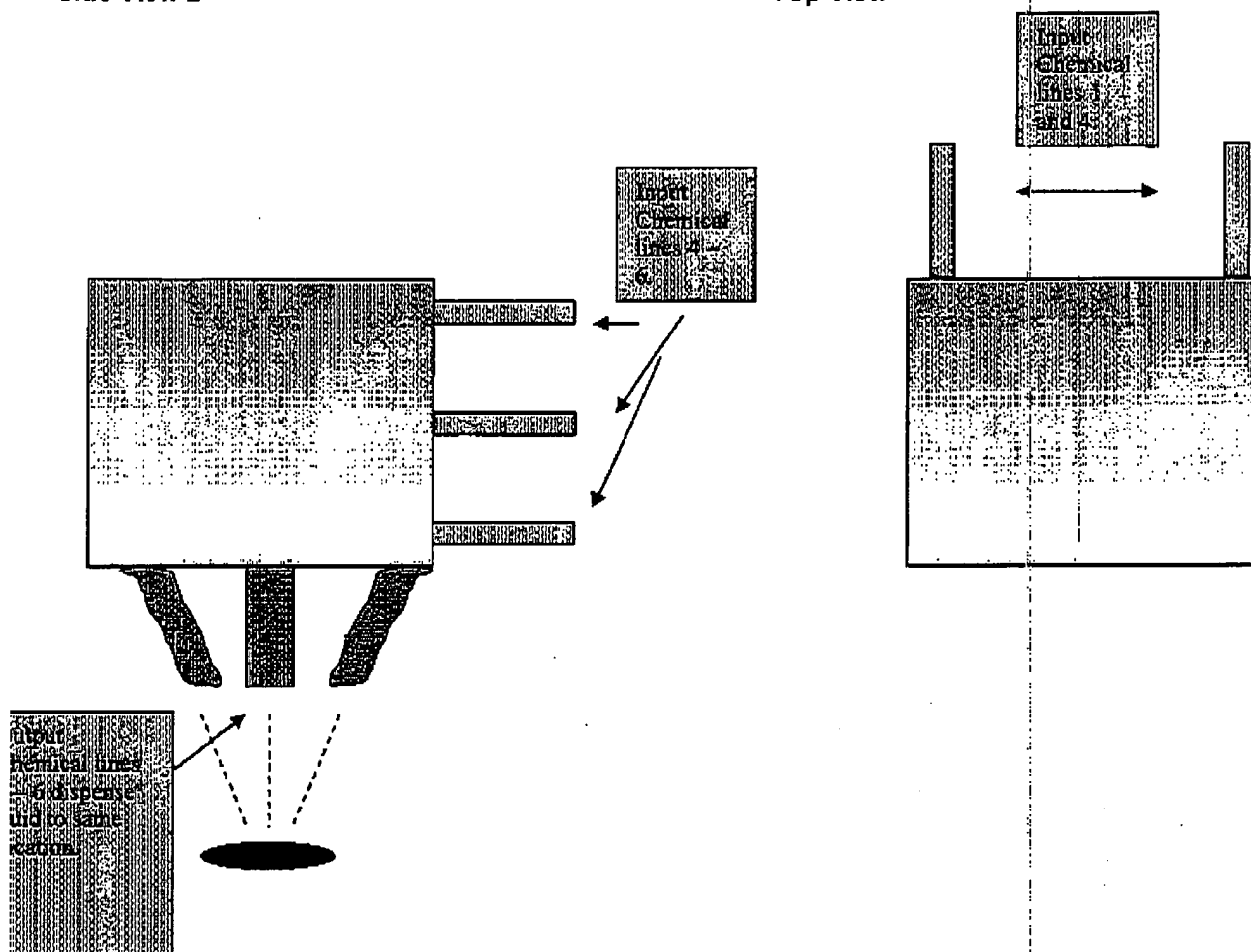
Front View



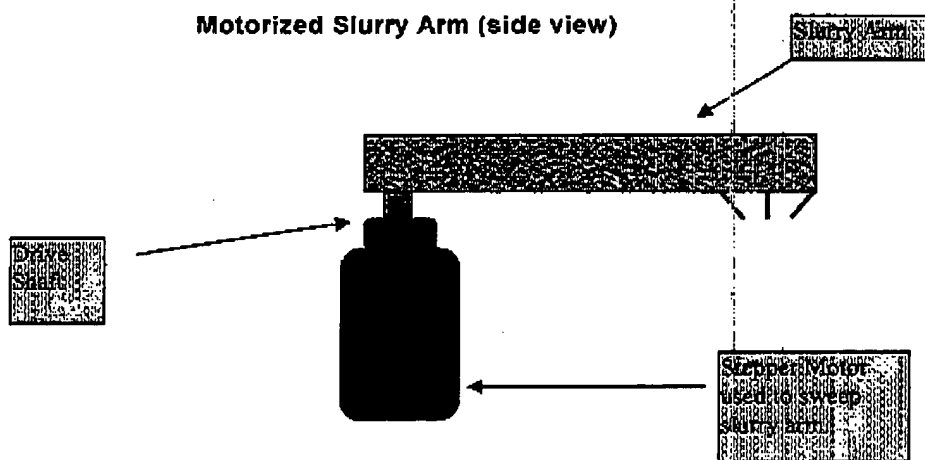
Rev. 16, 5/02

Side View 2

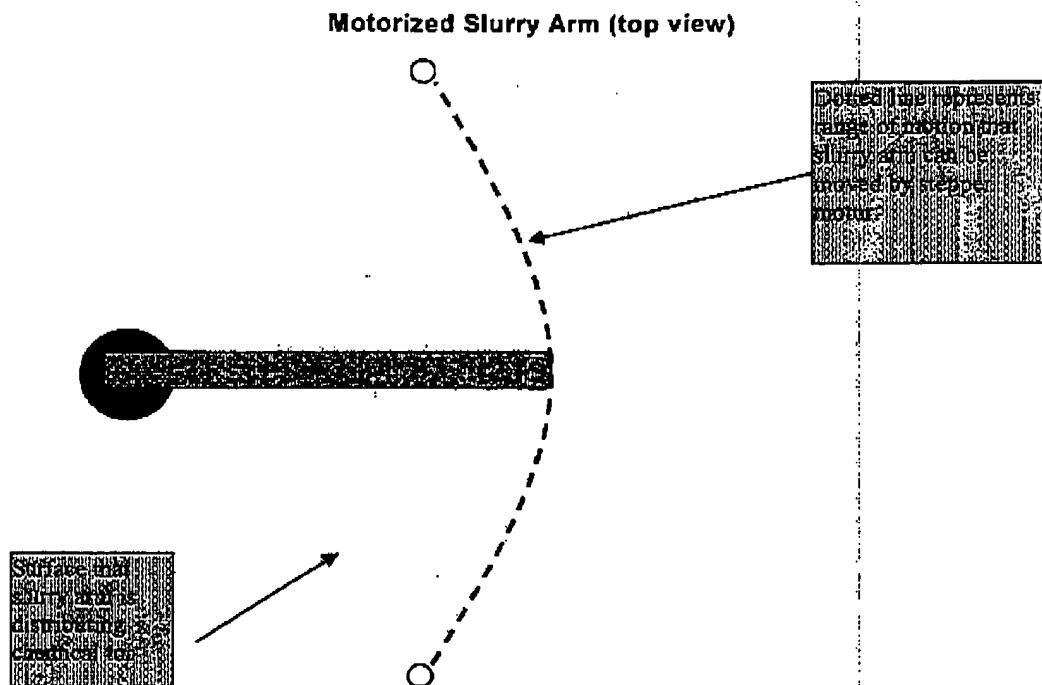
Top View



Motorized Slurry Arm (side view)



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4. **Value of your invention to Intel (how will it be used?).**
This invention could be used in any CMP process and any semiconductor wafer manufacturing.
5. **Explain how your invention is novel. If the technology itself is not new, explain what makes it different.**
Ability to modulate slurry arm position while in process as a process parameter input variable.
6. **Identify the closest or most pertinent prior art that you are aware of.**
None.
7. **Who is likely to want to use this invention or infringe the patent if one is obtained and how would infringement be detected?**

**HAVE YOUR SUPERVISOR READ AND FORWARD IT ELECTRONICALLY
VIA E-MAIL TO "INVENTION DISCLOSURE SUBMISSION"**

DATE: _____ SUPERVISOR: _____

BY APPROVING, I (SUPERVISOR) ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THIS
DISCLOSURE, AND RECOMMEND THAT THE HONORARIUM BE PAID

Exhibit I

Patent Disclosure Form - Slurry Arm (2) - Microsoft Word

Patent Disclosure Form - Slurry Arm (2) Properties

General Summary Statistics Contents Custom

Created: Friday, September 20, 2002 4:46:00 AM
 Modified: Monday, October 03, 2005 12:34:23 PM
 Accessed: Monday, October 03, 2005 12:56:34 PM
 Printed: Friday, September 20, 2002 4:46:00 AM

Last saved by: Colby House
 Revision number: 10
 Total editing time: 75 Minutes

Statistics:

| Statistic name | Value |
|---------------------------|-------|
| Pages: | 5 |
| Paragraphs: | 135 |
| Lines: | 304 |
| Words: | 944 |
| Characters: | 5211 |
| Characters (with spaces): | 6134 |
| Bytes: | 22016 |

Rev. 16, 50%

INTEL INVENTION
ATTORNEY-CLIENT PRIVILEGE
 (located at <http://legal.intel.com>)

DATE _____

It is important to provide accurate and detailed information your invention for possible filing as a patent application. An electronically via email to your manager/supervisor or via email account "invention disclosure submissions." If you h

☐ Last Name: House First Name: _____
 Title Phone Number: 603-613-6310 Title Fax Number: _____
 Email address: Colby.House@intel.com
 Citizenship: U.S. Are you a co-inventor? ☐
 Home Address: 2582 Hillside Avenue
 City: Hillsboro State: OR
 Corporate Level Group: Division: _____
 Supervisor: Bramwell Thomas WWID: 100

Page 1 Sec 1 1/5 At 0.4 In 1 Col 1

start

Namiki, James J.

From: House, Colby J [colby.j.house@intel.com]
Sent: Monday, October 03, 2005 1:37 PM
To: Namiki, James J.; Liu, Heng
Subject: RE: Patent Application for Slurry Arm Invention

James,

See below for date of disclosure date received (Feb 11, 2003):

| Legal Web Site - Patent Database Information Center - Microsoft Internet Explorer | | | | | |
|---|-------------------|---|---------------|--------------|--|
| http://legal.intel.com/patent/Queries/zxdesc_list.asp?wwid=10638266 | | | | | |
| Intel Legal Home | | | | | |
| LGA Quick Links What's New Education Legal Hotline Contact Us | | | | | |
| Disclosure Status | | | | | |
| Disclosure Status for COLBY HOUSE (10638266) | | | | | |
| Committee | Disclosure Number | Disclosure Title | Date Received | Status | |
| TMG/PROCESS | 45919 | DRYER BOX | 6/19/2005 | TO BE PUBLIS | |
| TMG/PROCESS | 45324 | METHOD OF CLEANING WAFERS FOR THE MANUFACTURE OF SEMICONDUCTOR DEVICES | 6/2/2005 | TRADE SECRE | |
| TMG/PROCESS | 33792 | METHOD OF INCREASED RUN RATE AND THROUGHPUT UTILIZING MULTISURFACE POLISH PAD DURING CHEMICAL MECHANICAL POLISH | 9/4/2003 | DECLIN | |
| TMG/PROCESS | 31010 | POLISH PAD WITH CENTERING WINDOW | 4/13/2003 | DECLIN | |
| TMG/PROCESS | 30757 | SOFTWARE PROGRAMMABLE SLURRY DISPENSE ARM FOR OPTIMIZING CMP PROCESS | 3/30/2003 | PUBLIS | |
| TMG/PROCESS | 30110 | PROGRAMMABLE MULTIPURPOSE SLURRY ARM WITH OR WITHOUT PRECISION DISPENSE NOZZLE | 3/11/2003 | PENDIN | |

**SCHWABE
WILLIAMSON
& WYATT**

 P.C.
ATTORNEYS AT LAW

NEW CLIENT/MATTER FORM

Date 04/23/2003 Prepared by af

EXISTING CLIENT

CLIENT INFORMATION

| | | | |
|-----------------|--|----------|--------|
| Client Model | 110348 | Client # | 110348 |
| Client Name 1 | INTEL LEGAL - PPG/TMG-PROCESS | | |
| Client Name 2 | | | |
| Address Line 1 | INTEL CORPORATION | | |
| Address Line 2 | DAVID SIMON | | |
| Address Line 3 | CHIEF PATENT COUNSEL | | |
| Address Line 4 | C/O MALOU DE LEON, SC4-203 | | |
| Address Line 5 | 2200 MISSION COLLEGE BLVD | | |
| Address Line 6 | SANTA CLARA, CA 95052 | | |
| City | SANTA CLARA | State | CA |
| Zip | 95052 | Country | |
| Intern'l Prefix | Phone # (408) 765-6886 | | |
| Fax # | SS/Tax ID. | | |
| Contact Name | Contact Title | | |
| Dom/Int'l D | Add To Timekeeper's Contact List <input checked="" type="checkbox"/> | | |

MATTER INFORMATION

| | | | |
|-----------------------|---|------------------------|------------|
| Matter Model | 110348-132026 | Matter # | WFM_113198 |
| Matter Description | P16696 - PROGRAMMABLE MOTORIZED SLURRY ARM WITH | | |
| Additional Desc. | OR WITHOUT PRECISION DISPENSE NOZZLE | | |
| Additional Desc. | | | |
| Department | BUSN | Business & Corporate | |
| Practice | 110 PT | Patents and Trademarks | |
| Primary Billing Atty. | TFH | Timothy F Haslach | |
| Location | 01 | Portland | |
| Supervising Atty. | JKL | Klindtworth, Jason K | |
| Court/Case # | Date of Service | | |
| Claim # | Date of Injury/Date of Loss | | |
| Opposing Counsel | | | |
| Dom/Int'l | D | | |

 Exhibit IV

MATTER INFORMATION (continued)

Matter Address for billing purposes (if different from the client address)

Do not put Contact Name into "Address Line1" field.

| | | | |
|-----------------|---------|----------------------|--|
| Address Line 1 | | | |
| Address Line 2 | | | |
| Address Line 3 | | | |
| Address Line 4 | | | |
| Address Line 5 | | | |
| Address Line 6 | | | |
| Intern'l Prefix | Phone # | Fax # | |
| Matter Contact | | Matter Contact Title | |

RELATED PARTIES

[illegible]

| | | | |
|---------|-------|------------|-------|
| BatchID | 30925 | 04/24/2003 | 13:30 |
|---------|-------|------------|-------|

Conflicts Search Action: #1

Brothers, Randi

04/24/2003

Possible Conflict N

Conflicts Search Action: #2

Cliff, Michelle M.

04/24/2003

| Approved <input type="checkbox"/> | Reason (explain how conflict was cleared) |
|-----------------------------------|---|
| | |

| | | | |
|---------------------|---------------------------------|-------------|------------|
| File Folder Request | Conflict Reviewed By: | | |
| | Practice Group Conflict Review: | AuYeung, AI | 04/24/2003 |

BUSINESS REVIEW INFORMATION

| | | |
|--|--------------------------|---------|
| Add Client To New Contact List | Desc. of Client Business | |
| Referred by | | |
| Address | | |
| City/State/Zip | Phone # | |
| Add Referral Source to Contact List | | |
| Anticipated Fees/Costs | Client's Obligation | |
| Retainer | Regular Billing M | Monthly |
| Fee Arrangement H | Hourly | |
| Contingency Fee Board Approval | | |
| Contingency Fee Accounting Approval | | |
| Fee Agreement/Engagement Letter | | |
| If no, please explain | | |
| Mandatory Credit Check Exception Request (State Reason) | | |
| Check If You DO NOT Want Automatic Managing Partner's Welcome Letter Sent <input type="checkbox"/> | | |

BILLING INFORMATION

| | |
|----------------------------------|--|
| Use Billing Format # | |
| Other Reference (please specify) | |

Special Billing Rates (other than normal computer rates) ☐ All Matters for this Client
☒ This Matter Only

| Timekeeper | St. Rate | Rate | Title | Rate |
|------------|----------|------|-------|------|
| | | | | |

Please continue to the next pageto Records Information section.

Special Rate Approval

APPROVAL & FINALIZATIONPractice Group Approval Date Record Center Signature Date

The program will use the Autonumbering system method to assign new Client Number. If you wish to change this, please enter the Client Number into the appropriate field. Please also enter the Matter Number and press the "Save Data" button.

Client Number: Matter Number:

Assign Client Number: 110348

Assign Matter Number: 110348-133033

RECORDS INFORMATIONNumber
of folders 1

| Folders | bar code |
|---------|----------|
| 1 | |
| 2 | |

| Inserts | folder |
|---------|--------|
| 1 | 21 |
| 2 | 22 |
| 3 | 23 |
| 4 | 24 |
| 5 | 25 |
| 6 | 26 |
| 7 | 27 |
| 8 | 28 |
| 9 | 29 |
| 10 | 30 |
| 11 | 31 |
| 12 | 32 |
| 13 | 33 |
| 14 | 34 |
| 15 | 35 |
| 16 | 36 |
| 17 | 37 |
| 18 | 38 |
| 19 | 39 |
| 20 | 40 |

Page 1

NAME SEARCHED: INTEL CORPORATION

04/14/03
BATCH: 30925

SEARCH PATTERN: 8888

NO HITS FOR

Batch Number: 30925

| Date | Client | Attorney | Hours | Amount | Description | Invoice Number | Time Code |
|------------|--------|-------------------------|-------|----------|---|----------------|-----------|
| 05/27/2003 | PJF | Paul J Fordenbacher | 6.75 | 1,350.00 | Review invention disclosure, drafting patent | 110348-133033 | 4131741 |
| 02/06/2004 | | Invoice=874739 | 0.00 | 0.00 | application | | |
| 05/28/2003 | PJF | Paul J Fordenbacher | 4.25 | 850.00 | Continue drafting patent application | 110348-133033 | 4131743 |
| 02/06/2004 | | Invoice=874739 | 0.00 | 0.00 | | | |
| 05/29/2003 | PJF | Paul J Fordenbacher | 8.33 | 1,666.00 | Continue drafting patent application | 110348-133033 | 4131744 |
| 02/06/2004 | | Invoice=874739 | 8.33 | 1,666.00 | | | |
| 05/30/2003 | PJF | Paul J Fordenbacher | 9.25 | 1,850.00 | Continue drafting patent application | 110348-133033 | 4131745 |
| 02/06/2004 | | Invoice=874739 | 9.25 | 1,850.00 | | | |
| 06/17/2003 | PJF | Paul J Fordenbacher | 3.25 | 650.00 | Drafting patent application | 110348-133033 | 4150224 |
| 02/08/2004 | | Invoice=874739 | 3.25 | 650.00 | | | |
| 06/25/2003 | PJF | Paul J Fordenbacher | 2.00 | 400.00 | Application preparation, submit first draft for | 110348-133033 | 4158553 |
| 02/06/2004 | | Invoice=874739 | 2.00 | 400.00 | review | | |
| 08/11/2003 | ATA | Aloysius T (Al) AuYeung | 3.50 | 1,242.50 | Reviewed and revised patent application | 110348-133033 | 4223304 |
| 02/06/2004 | | Invoice=874739 | 3.50 | 1,242.50 | | | |
| 09/16/2003 | ATAW | Aloysius T (Al) AuYeung | 1.25 | 443.75 | Revised patent application | 110348-133033 | 4227122 |
| 02/06/2004 | | Invoice=874739 | 1.25 | 443.75 | | | |
| 09/17/2003 | ATA | Aloysius T (Al) AuYeung | 1.00 | 355.00 | Revised patent application | 110348-133033 | 4227080 |
| 02/06/2004 | | Invoice=874739 | 1.00 | 355.00 | | | |
| 09/18/2003 | ATA | Aloysius T (Al) AuYeung | 0.50 | 177.50 | Revised patent application | 110348-133033 | 4227093 |
| 02/06/2004 | | Invoice=874739 | 0.50 | 177.50 | | | |
| 09/18/2003 | RLS | Rachel L Bradfute | 0.60 | 60.00 | Prepare formal documents for inventor signature | 110348-133033 | 4228860 |
| 02/06/2004 | | Invoice=874739 | 0.60 | 60.00 | | | |
| 10/28/2003 | CJL | Christopher J Lewis | 0.20 | 35.00 | Followup with OR on status of application; | 110348-133033 | 4261317 |
| 02/08/2004 | | Invoice=874739 | 0.20 | 35.00 | | | |
| 01/13/2004 | ATA | Aloysius T (Al) AuYeung | 0.50 | 177.50 | Verified formal drawings | 110348-133033 | 4322519 |
| 02/08/2004 | | Invoice=874739 | 0.50 | 177.50 | | | |
| 01/22/2004 | ATA | Aloysius T (Al) AuYeung | 0.50 | 187.50 | Services in connection with filing | 110348-133033 | 4328125 |
| 02/06/2004 | | Invoice=874739 | 0.50 | 187.50 | non-provisional patent application | | |
| 01/22/2004 | HLA | Heather L Adamson | 0.75 | 82.50 | Service in connection with filing Patent | 110348-133033 | 4324991 |
| 02/06/2004 | | Invoice=874739 | 0.75 | 82.50 | Application, including preparing and filing | | |
| | | | | | transmittal package, and post-filing processing | | |
| 05/03/2004 | HLA | Heather L Adamson | 0.10 | 11.00 | Service rendered in connection with reviewing | 110348-133033 | 4420259 |
| 06/07/2004 | | Invoice=885299 | 0.10 | 11.00 | and processing Filing Receipt | | |
| 08/12/2004 | HLA | Heather L Adamson | 0.10 | 11.50 | Service rendered in connection with reviewing | 110348-133033 | 4508374 |
| 09/08/2004 | | Invoice=893301 | 0.10 | 11.50 | and processing Notice of Recordation of | | |
| | | | | | Assignment | | |
| 02/17/2005 | HLA | Heather L Adamson | 0.25 | 30.00 | Service in connection with reviewing and | 110348-133033 | 4685881 |
| 03/09/2005 | | Invoice=908471 | 0.25 | 30.00 | processing Office Action, and uploading and | | |
| | | | | | updating CPA | | |
| 03/02/2005 | ATAW | Aloysius T (Al) AuYeung | 0.25 | 100.00 | Services in connection with receipt of office | 110348-133033 | 4700360 |
| 05/09/2005 | | Invoice=913918 | 0.25 | 100.00 | action, including Initial review of the same | | |
| 04/12/2005 | MMC | Mark McClure | 4.00 | 720.00 | Review office action; review cited prior art; | 110348-133033 | 4741367 |
| 05/09/2005 | | Invoice=913918 | 4.00 | 720.00 | review claimed invention; map cited art against | | |
| | | | | | claimed invention | | |
| 04/13/2005 | MMC | Mark McClure | 7.50 | 1,350.00 | Review office action; review cited prior art; | 110348-133033 | 4741370 |
| 05/09/2005 | | Invoice=913918 | 7.50 | 1,350.00 | review claimed invention; map cited art against | | |
| | | | | | claimed invention; draft response | | |
| 04/13/2005 | YLC | Yvette L Chrisaden | 1.10 | 99.00 | Prepare base response to office action for | 110348-133033 | 4743114 |
| 05/09/2005 | | Invoice=913918 | 1.10 | 99.00 | attorney expansion | | |
| 04/15/2005 | ATA | Aloysius T (Al) AuYeung | 0.50 | 200.00 | Reviewed and revised response to office action | 110348-133033 | 4743736 |
| 05/09/2005 | | Invoice=913918 | 0.50 | 200.00 | | | |

Billed and Unbilled Recap Of Time Detail - [110348-133033 - P16696 - PROGRAMMABLE MOTORIZED SLURRY ARM WITH]

Page 2

Client:110348 - INTEL LEGAL - PPG/TMG-PROCESS 10/3/2005 3:14:56 PM

| Date | Name | Time | Amount | Description | Case | Amount |
|------------|-----------------------------|-------|-----------|--|---------------|---------|
| 04/16/2005 | MMC Mark McClure | 0.80 | 144.00 | Review and revise response | 110348-133033 | 4741275 |
| 05/09/2005 | Invoice=913918 | 0.80 | 144.00 | | | |
| 04/18/2005 | YLC Yvette L Christensen | 0.30 | 27.00 | Services in connection with preparation of | 110348-133033 | 4743125 |
| 05/09/2005 | Invoice=913918 | 0.30 | 27.00 | response to office action and accompanying | | |
| | | | | documentation for filing | | |
| 04/18/2005 | ATA Aloysius T (Al) AuYeung | 0.25 | 100.00 | Services in connection with filing response to | 110348-133033 | 4749108 |
| 05/09/2005 | Invoice=913918 | 0.25 | 100.00 | office action | | |
| | | | | | | |
| | BILLED TOTALS: WORK: | 57.78 | 12,319.75 | 26 records | | |
| | BILLED TOTALS: BILL: | 46.78 | 10,119.75 | | | |
| | | | | | | |
| | GRAND TOTALS: WORK: | 57.78 | 12,319.75 | 26 records | | |
| | GRAND TOTALS: BILL: | 46.78 | 10,119.75 | | | |

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